

SUPERFUND RESPONSE ACTION PRIORITY PANEL REVIEW FORM**Date Form Completed:** February 22, 2013**General Site Information**

Region:	6	City:	Roswell	State:	NM
CERCLIS EPA ID:	NMD0000605386	CERCLIS Site Name:	McGaffey and Main Ground Water Plume Site		
NPL Status: (P/F/D)	Final	Year Listed to NPL:	2002		

Brief Site Description: *(Site Type, Current and Future Land Use, General Site Contaminant and Media Info, Site Area and Location information.)*

The McGaffey and Main Groundwater Plume Superfund Site (M&M) is located in southeast Roswell, Chaves County, New Mexico. Contamination at the Site was caused by historical practices and undocumented releases of perchloroethylene (PCE) from one or more dry cleaning facilities. The Site consists of one operable unit (OU) divided into two study areas: the Source Area and the Groundwater Plume Area.

The Source Area generally corresponds to a 3 acre size area located along the 1100 block of South Main Street in Roswell. This area encompasses the former dry cleaning facilities. The Groundwater Plume Area generally corresponds to a roughly 2 square mile area located outside the Source Area boundaries where site-related PCE has been detected in groundwater at concentrations above the 5 microgram per liter (µg/L) federal drinking water standard. The groundwater "hot spot" is located within the Groundwater Plume Area, 1 mile downgradient of the Source Area.

The central portion of the Groundwater Plume Area is an area historically referred to during the remedial investigation as the ground water plume hot spot where PCE concentrations have typically ranged between 100 and 1000 µg/L. Ground water plume concentrations below the MCLs are estimated to cover an area of approximately 0.75 miles long by 0.5 mile wide at the leading portion of the plume extending into an unincorporated area with some domestic well use and extensive agricultural groundwater irrigation. The contamination was caused by historical practices and undocumented releases of PCE from one or more dry cleaning facilities that operated in the Source Area. These releases resulted in the formation of a ground water contaminant plume containing PCE and its breakdown products trichloroethylene (TCE), cis-1,2-dichloroethylene (cis-1,2-DCE), trans-1,2-DCE, and vinyl chloride. These chlorinated compounds are the contaminants of concern (COCs) at the Site. The COCs reside primarily in the ground water and soil gas with vapor intrusion into some buildings occurring within the Source Area. The COCs are also present in ground water within the Groundwater Plume Area.

The current land use at the Site source area and central ground water plume hot spot includes mixed residential homes and commercial businesses. At the leading portion of the ground water plume, land use is primarily agricultural; the agricultural industry in the area is reliant upon ground water. Based on the history of the area, the future land use is unlikely to change significantly from the current uses. A gradual increase in residential use has occurred and is likely to continue within the unincorporated, predominantly agricultural area to the southeast.

The Record of Decision (ROD) was issued in September 2008. The selected remedy includes three components: 1) Source Area Soil, Soil Vapor and Indoor Air; 2) Source Area Groundwater; and 3) Groundwater Plume Area ground water. RA construction of VIMS and ESVE was recently completed to treat Source Area Soil, Soil Vapor, and Indoor Air. The proposed remedy for Source Area Groundwater consists of a pump-and-treat system. The proposed remedies for Groundwater Plume Area ground water consist of a downgradient hydraulic containment and treatment system and a central plume "hot spot" area in-situ enhanced reductive dechlorination (ERD) treatment system.

SUPERFUND RESPONSE ACTION PRIORITY PANEL REVIEW FORM

Current information from Site monitoring wells and privately owned domestic and irrigation wells indicates that the ground water plume originates within the 1100 block of South Main Street and extends southeast approximately 1.5 miles at concentrations above the MCL (5 ug/L) and up to 0.75 mile beyond the city limits at concentrations below the MCL into unincorporated agricultural areas that pump ground water for irrigation and for domestic use. The ground water plume impacts four different water bearing zones within the shallow alluvial aquifer. Beyond the city limits, recent data indicate that the ground water plume is beginning to impact the underlying artesian aquifer that is heavily utilized for municipal drinking water and agricultural irrigation.

General Project Information

Type of Action:	Remedial Action	Site Charging SSID:	06LWCO00
Operable Unit:	OU1	CERCLIS Action RAT Code:	?
Is this the final action for the site that will result in a site construction completion?			<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Will implementation of this action result in the Environmental Indicator for Human Exposure being brought under control?			<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Response Action Summary

Describe briefly site activities conducted in the past or currently underway:

For purposes of remediation, the Site has been further sub-divided into 5 remedial action projects:

- Remedial Action #1 – Source Area Vapor Intrusion Mitigation System (VIMS)
- Remedial Action #2 – Source Area Soil Vapor Extraction (Phase 1 or "Lite")
- Remedial Action #3 – Source Area Soil Vapor Extraction (Phase 2 or "full-scale")
- Remedial Action #4 – Groundwater Plume – Full extent of impacted ground water
- Remedial Action #5 – Groundwater Plume - Source Area
- Remedial Action #6 – Groundwater Plume – Hot spot away from Source Area release

Remedial action (RA) construction of vapor intrusion mitigation systems for Remedial Action #1 and enhanced soil vapor extraction (ESVE) for Remedial Action #2 was recently completed to treat Source Area Soil, Soil Vapor, and Indoor Air. The remaining Remedial Actions, which include a Source Area Groundwater pump-and-treat system, a Groundwater Plume hydraulic containment and treatment system, and a Groundwater Plume central "hot spot" area in-situ enhanced reductive dechlorination (ERD) treatment system, have not been approved for remedial action funds but are currently in the remedial design phase.

Specifically identify the discrete activities and site areas to be considered by this panel evaluation:

This request is for RA funding for Remedial Action #6, the construction of in-situ ERD treatment of the central portion of the ground water plume (Groundwater Plume Area "hot spot") exhibiting elevated (above 5 ug/L) PCE. Initiating this component of the ground water remedy will begin PCE mass removal in the central portion of the plume to alleviate its migration toward the unincorporated agricultural irrigation area beyond the Roswell city limits and to mitigate its migration into the underlying artesian aquifer used as City of Roswell drinking water source. RA construction of central Groundwater Plume hot spot in-situ ERD will initiate COC mass removal in the area of the highest concentrations of PCE in the ground water until the remaining Source Area Groundwater and Groundwater Plume Area ground water components are implemented.

Briefly describe additional work remaining at the site for construction completion after completion of discrete activities being ranked:

SUPERFUND RESPONSE ACTION PRIORITY PANEL REVIEW FORM

Full Scale RA of ESVE for Source Area Soil (RA Project #3), RD and RA for the Source Area Groundwater pump-and-treat system (RA Project #5) and the Groundwater Plume Area hydraulic containment and treatment system (RA Project #4) will also be required to achieve construction completion for the Site.

Response Action Cost

Total Cost of Proposed Response Action:

(\$ amount should represent total funding need for new RA funding from national allowance above and beyond those funds anticipated to be utilized through special accounts or State Superfund Contracts.)

\$5,000,000.00

Source of Proposed Response Action Cost Amount:

(ROD, 30%, 60%, 90% RD, Contract Bid, USACE estimate, etc...)

ROD

Breakout of Total Action Cost Planned Annual Need by Fiscal Year:

(If the estimated cost of the response action exceeds \$10 million, please provide multiple funding scenarios for fiscal year needs; general planned annual need scenario, maximum funding scenario, and minimum funding scenario.)

4th quarter FY13: \$2,000,000 for initial phase of in-situ ERD RA construction consisting of a gallery of 20 injection wells across the currently defined portion of the central plume "hot spot" migration pathway.

2nd quarter FY15: \$3,000,000 for full scale in-situ ERD RA construction consisting of an additional 20 to 30 injection wells. Full scale expansion of the initial phase gallery will be based on further delineation of Groundwater Plume central "hotspot" migration pathways. Initial phase in-situ ERD performance monitoring data and remedial design investigation (RDI) data will provide the basis for the full scale in-situ ERD implementation strategy.

Other information or assumptions associated with cost estimates?

The Groundwater Plume central "hot spot" area has expanded to at least 4 times the size depicted in the September 2008 ROD.

Above costs are based on ROD estimates (2008) and will likely change once the final design phase is completed.

Readiness Criteria

1. Date State Superfund Contract or State Cooperative Agreement will be signed (Month)?

August 2013

2. If Non-Time Critical, is State cost sharing (provide details)?

N/A

3. If Remedial Action, when will Remedial Design be 95% complete?

June 2013

4. When will Region be able to obligate money to the site?

SUPERFUND RESPONSE ACTION PRIORITY PANEL REVIEW FORM

04FY13

5. Estimate when on-site construction activities will begin:

December 2013 is the anticipated mobilization date when on-site activities could begin.

6. Has CERCLIS been updated to consistently reflect project cost/readiness information?

Yes

Site/Project Name: McGaffey and Main Ground Water Plume Site

Criteria #1 - RISKS TO HUMAN POPULATION EXPOSED (Weight Factor = 5)

Describe the exposure scenario(s) driving the risk and remedy. Include risk and exposure information on current/future use, on-site/off-site, media, exposure route, and receptors:

Ground water is the media driving the risk and remedy. Ground water data collected from private domestic and irrigation wells in the leading portion of the plume indicate that 7 domestic wells (6 shallow and 1 artesian) are currently impacted at PCE concentrations below the MCL; 3 artesian irrigation wells are currently impacted at PCE concentrations below the MCL; and 1 shallow irrigation well exhibits a PCE concentration (89 ug/L) above the MCL. All four of the irrigation wells supply water for orchards that grow pecans for human consumption.

These impacts to the domestic and irrigation wells are recent impacts discovered during the design investigations. Prior sampling during the remedial investigation did not detect PCE in these wells. Based on the ground water flow at the Site, these concentrations are expected to increase.

Current and future use of ground water in the leading portion of the plume includes domestic use, watering livestock including dairy cattle, and irrigation of commercial crops for consumption by humans and livestock. Potential receptors include residents, farm workers, consumers of irrigated crops, and consumers of milk (produced from cattle watered by the ground water). Recent detection of Site COCs in the heavily utilized underlying artesian aquifer is of major concern.

Estimate the number of people reasonably anticipated to be exposed in the absence of any future EPA action for each medium for the following time frames:

<u>MEDIUM</u>	<u><2yrs</u>	<u><10yrs</u>	<u>>10yrs</u>
GW	10	100	1000

Discuss the likelihood that the above exposures will occur:

Exposure to COCs in ground water at concentrations below MCLs is currently occurring based on August 2012 ground water data collected from private domestic and irrigation wells in the leading portion of the plume. As the irrigation pumping southeast of the city limits continues to draw the ground water plume down gradient, concentrations of COCs can be expected to increase in the leading portion of the plume and in the underlying artesian aquifer such that exposures to COC concentrations above MCLs will likely occur.

SUPERFUND RESPONSE ACTION PRIORITY PANEL REVIEW FORM

Other Risk/Exposure Information?	
The NMED environmental contractor is currently performing a risk screening analysis for the potential exposure scenarios of human consumption of pecan and corn crops irrigated with PCE-contaminated ground water.	
Site/Project Name:	McGaffey and Main Groundwater Plume Site
Criteria #2 – SITE/CONTAMINANT STABILITY (Weight Factor = 5)	
Describe the means/likelihood that contamination could impact other areas/media given current containment:	
<p>The Roswell Artesian Ground Water Basin is a two aquifer system consisting of an artesian aquifer, overlain by a leaking confining unit, overlain by a shallow aquifer. Until 2011, the Site ground water plume was believed to reside exclusively within the shallow aquifer. Since 2011, COCs have been detected below MCLs in ground water from several artesian irrigation wells and at least one artesian domestic supply well at the leading portion of the plume. The underlying artesian aquifer represents a major regional source of municipal, cooperative, private domestic water supply and commercial agricultural irrigation supply. Initiating in-situ ERD of treatment of the central "hot spot" area will begin PCE mass removal in the core of the plume to alleviate its migration toward the unincorporated agricultural irrigation area beyond the Roswell city limits and to mitigate it's migration into the underlying artesian aquifer.</p>	
Are the contaminants contained in engineered structure(s) that currently prevents migration of contaminants? Is this structure sound and likely to maintain its integrity?	
No. There is no containment structure to prevent COC mass transport at the hot-spot area and migration of ground water at the leading edge of the plume.	
Are the contaminants in a physical form that limits the potential to migrate from the site? Is this physical condition reversible or permanent?	
<p>The contaminants are in a highly mobile ground water phase. The PCE concentrations in ground water are very high and typical of other sites where DNAPL may occur, although no evidence of DNAPL has been located at the Site. If this is the case, then the weathered ground water plume and embedded contaminants within the hydrogeological matrix will continue to act as a source of contamination towards the leading edge of the plume for a very long time.</p> <p>The absence of significant concentrations of PCE and TCE transformation products (cis 1,2-dichloroethene, vinyl chloride and ethene) indicates that very little natural degradation is occurring. Given this condition, high levels of PCE and TCE are expected to persist in ground water for periods exceeding several hundred years.</p>	
Are there institutional physical controls that currently prevent exposure to contamination? How reliable is it estimated to be?	
No, there are no administrative or physical controls that currently prevent exposure to contamination at the Groundwater Plume Hot Spot Area.	
Other information on site/contaminant stability?	
Natural recovery is unlikely to occur in the central Groundwater Plume "hot spot" as the chlorinated contaminants are present in high concentrations and there is little evidence of natural attenuation at present.	
Site/Project Name:	McGaffey and Main Ground Water Plume Site
Criteria #3 – CONTAMINANT CHARACTERISTICS (Weight Factor = 3)	
<i>(Concentration, toxicity, and volume or area contaminated above health based levels)</i>	
List Principle Contaminants (Please provide average and high concentrations.):	
<i>(Provide upper end concentration (e.g. 95% upper confidence level for the mean, as is used in a risk assessment,</i>	

SUPERFUND RESPONSE ACTION PRIORITY PANEL REVIEW FORM

or maximum value [assuming it is not a true outlier], along with a measure of how values are distributed {e.g. standard deviation} or a central tendency values [e.g., average].)

<u>Contaminant</u>	<u>*Media</u>	<u>**Concentrations</u>
PCE (central plume / hot spot)	GW	539 ug/L – high, 111 ug/L - avg
TCE (central plume / hot spot)	GW	8 ug/L – high, 4.22 ug/L - avg

*(*Media: AR – Air, SL – Soil, ST – Sediment, GW – Groundwater, SW – Surface Water)*

*(**Concentrations: Provide concentration measure used in the risk assessment and Record of Decision as the basis for the remedy.)*

Describe the characteristics of the contaminant with regards to its inherent toxicity and the significance of the concentrations and amount of the contaminant to site risk. *(Please include the clean up level of the contaminants discussed.)*

The Site cleanup level for PCE in ground water is 5 ug/L and the Site cleanup level for TCE in ground water is 5 ug/L. These concentrations coincide with the respective MCLs for these COCs. The MCLs are representative of the inherent toxicity of the COCs. The portion of the Groundwater Plume exceeding the MCL for PCE is estimated to be approximately 2 miles long and approximately 1 to 1.5 miles wide.

Describe any additional information on contaminant concentrations which could provide a better context for the distribution, amount, and/or extent of site contamination. *(e.g. frequency of detection/outlier concentrations, exposure point concentrations, maximum or average concentration values, etc.....)*

Groundwater Plume concentrations below the MCLs are estimated to cover an area of approximately 0.75 to 1.0 mile long by 0.5 mile wide at the leading portion of the plume. This is the unincorporated area with some domestic well use and extensive agricultural irrigation where current exposure is most likely occurring and where impact to the artesian aquifer has recently been detected.

Other information on contaminant characteristics?

Site/Project Name:

McGaffey and Main Ground Water Plume Site

Criteria #4 – THREAT TO SIGNIFICANT ENVIRONMENT (Weight Factor = 3)

(Endangered species or their critical habitats, sensitive environmental areas.)

Describe any observed or predicted adverse impacts on ecological receptors including their ecological significance, the likelihood of impacts occurring, and the estimated size of impacted area:

There are no ecological receptors at the site.

Would natural recovery occur if no action was taken?

☐ Yes ☒ No

If yes, estimate how long this would take.

SUPERFUND RESPONSE ACTION PRIORITY PANEL REVIEW FORM

Natural recovery is unlikely to occur in the central Groundwater Plume "hot spot" as the chlorinated contaminants are present in high concentrations and there is little evidence of natural attenuation at present.

Other information on threat to significant environment?

Site/Project Name: McGaffey and Main Ground Water Plume Site

Criteria #5 – PROGRAMMATIC CONSIDERATIONS (Weight Factor = 4)

(Innovative technologies, state/community acceptance, environmental justice, redevelopment, construction completion, economic redevelopment.)

Describe the degree to which the community accepts the response action.

The community accepts the remedial action.

Describe the degree to which the State accepts the response action.

The state of New Mexico Environment Department is in full agreement with EPA's remedy selection and implementation. The State accepts the remedial action and encourages its timely implementation of the ERD component to reduce exposure risks.

Describe other programmatic considerations, e.g.; natural resource damage claim pending, Brownfields site, use of innovative technology, construction completion, economic redevelopment, environmental justice, etc...

The Site is in a small city in eastern New Mexico where resources are scarce. The community depends on governmental agencies for taking appropriate action to protect human health. The EPA's EJ Screen tool shows that approximately 50% of people within one-mile of the site are minority and low-income, which is significantly higher than national standards.

The economy in the leading portion of the plume is driven by agriculture. The agricultural water supply is ground water that is beginning to exhibit the presence of COCs. The potential for impairment to the agricultural water supply represents a potential significant adverse impact upon the local economy.

Although in-situ ERD is not necessarily an innovative technology, it will require little infrastructure and it may stimulate natural attenuation processes downgradient in the Groundwater Plume from substrate residuals.